CLAIMS

I CLAIM:

1. A damper assembly installed in a housing having a pair of side walls connected to a pair of end wells that define a conduit extending therethrough, wherein the damper is movable from an open position to a closed position to control fluid flow through the conduit, the damper assembly comprising:

(a) at least one damper blade operating in a normally open position;

(b) a spring member operably connected between the blade and the housing, wherein the spring member applies a force to the damper blade biasing the blade towards the closed position;

(c) a retaining member in removable mechanical communication with the damper blade to maintain the damper blade in the open position against the biasing force until an occurrence of a predetermined condition; and

(d) a latch mechanism that engages when the damper blade closes to prevent counter-movement of the damper blade towards the open position.

2. The damper assembly as recited in claim 1, wherein the retaining member is a fusible link.

3. The damper assembly as recited in claim 2, wherein the fusible link fails upon an occurrence of a predetermined condition, and wherein the biasing force closes the damper blade when the fusible link fails.

4. The damper assembly as recited in claim 1, wherein the retaining member is heat sensitive.

5. The damper assembly as recited in claim 1, wherein the latch mechanism includes a linkage rotatably coupled to the damper blade, wherein linkage rotation engages the latch mechanism when the blade is biased towards the closed position.

6. The damper assembly as recited in claim 5, wherein the linkage includes a latch member that engages a catch member that is supported by the housing.

7. The damper assembly as recited in claim 6, wherein the latch member comprises a protrusion extending from the linkage.

8. The damper assembly as recited in claim 5, wherein the linkage includes a latch member that is movably supported by the linkage, and wherein a spring member biases the latch member into interference with a catch member that is supported by the housing.

9. The damper assembly as recited in claim 5, wherein the blade is rotatably coupled to a leg that is connected to the linkage.

10. The damper assembly as recited in claim 9, further comprising a second blade rotatably coupled to a second leg that is, in turn, rotatably coupled to the linkage.

11. The damper assembly as recited in claim 5, wherein the spring is in mechanical communication with the blade at a first end, and in mechanical communication with the housing at a second end.

12. The damper assembly as recited in claim 11, wherein the spring is connected to the linkage at one end, and to one of the side walls at the second end.

13. The damper assembly as recited in claim 5, wherein the damper blade rotates about a shaft that is connected to the linkage.

14. The damper assembly as recited in claim 1, wherein the latch mechanism is mounted onto an outer surface of the housing.

15. A damper assembly installed in a housing having a pair of side walls connected to a pair of end wells that define a conduit extending therethrough, wherein the damper is movable from an open position to a closed position to control fluid flow through the conduit, the damper assembly comprising:

(a) at least one damper blade operating in a normally open position;

(b) a biasing member applying a force to the damper blade biasing the blade towards the closed position;

(c) a retaining member in removable mechanical communication with the damper blade to maintain the damper blade in the open position against the biasing force until an occurrence of a predetermined condition; and

(d) a latch mechanism including a latch member and a corresponding catch member, one of which in mechanical communication with the blade, the other of which in mechanical communication with the housing, wherein an interference is created between latch member and catch member to resist counter-movement of the damper blade towards the open position once the damper blade has closed.

16. The damper assembly as recited in claim 15, wherein the retaining member is a fusible link.

17. The damper assembly as recited in claim 16, wherein the fusible link fails upon an occurrence of a predetermined condition, and wherein the biasing force closes the damper blade when the fusible link fails.

18. The damper assembly as recited in claim 15, wherein the retaining member is heat sensitive.

19. The damper assembly as recited in claim 15, wherein the latch mechanism includes a linkage rotatably coupled to the damper blade, wherein linkage rotation engages the linkage when the blade is biased towards the closed position.

20. The damper assembly as recited in claim 19, wherein the latch member comprises a protrusion extending from the linkage.

21. The damper assembly as recited in claim 19, wherein the latch member is rotatably supported by the linkage, and wherein a spring member biases the latch member into interference with the catch member.

22. The damper assembly as recited in claim 19, wherein the blade is rotatably coupled to a leg that is connected to the linkage.

23. The damper assembly as recited in claim 22, further comprising a second blade rotatably coupled to a second leg that is, in turn, rotatably coupled to the linkage.

24. The damper assembly as recited in claim 19, wherein the biasing member comprises a spring operably connected between the linkage and the housing.

25. The damper assembly as recited in claim 24, wherein the spring is in mechanical communication with the linkage at one end, and supported by the housing at a second end.

26. The damper assembly as recited in claim 25, wherein the spring is connected to the linkage at one end, and to one of the side walls at a second end.

27. The damper assembly as recited in claim 19, wherein the damper blade rotates about a shaft that is connected to the linkage.

28. The damper assembly as recited in claim 15, wherein the latch mechanism is mounted onto an outer surface of the housing.

29. A method for operating a damper assembly of the type having at least one damper blade installed in a housing having a pair of side walls connected to a pair of end wells that define a conduit extending therethrough, wherein the blade is held open by a retaining member:

(A) causing the retaining member to fail;

(B) biasing the blade to a closed position to block the conduit with respect to fluid flow using a spring member that is operably connected between the blade and the housing; and

(C) after step B, activating a latch mechanism to prevent counter-movement of the blade from the closed position towards the open position.

30. The method as recited in claim 29, wherein the retaining member is a temperature-sensitive fusible link, and wherein step (A) further comprises breaking the fusible link.

31. The method as recited in claim 29, wherein step (C) further comprises rotating a linkage along with the damper blade to engage the latch mechanism when the blade is biased towards the closed position.

32. The method as recited in claim 31, wherein the linkage includes a latch member that engages a catch member that is supported by the housing.

33. The method as recited in claim 32, wherein the latch member comprises a protrusion extending from the linkage.

34. The method as recited in claim 31, wherein the linkage further includes a latch member that is rotatably supported by the linkage, further comprising biasing the latch member into interference with a catch member that is supported by the housing.

35. A method for operating a damper assembly of the type having at least one damper blade installed in a housing having a pair of side walls connected to a pair of end wells that define a conduit extending therethrough, wherein the blade is held open by a retaining member:

(A) causing the retaining member to fail;

(B) biasing the blade to a closed position to block the conduit with respect to fluid flow; and

(C) after step B, activating a latch mechanism, including a latch member and a corresponding catch member, one of which in mechanical communication with the blade, the other of which in mechanical communication with the housing, to resist counter-movement of the blade from the closed position towards the open position.

36. The method as recited in claim 35, wherein the retaining member is a heat-sensitive fusible link, and wherein step (A) further comprises breaking the fusible link.

37. The method as recited in claim 35, wherein the latch mechanism includes a linkage rotatably coupled to the damper blade, wherein step (C) further comprises rotating the linkage.

38. The method as recited in claim 37, wherein the latch member comprises a protrusion extending from the linkage.

39. The method as recited in claim 37, wherein the latch member is rotatably supported by the linkage, wherein step (C) further comprises biasing the latch member into interference with the catch member.

40. The method as recited in claim 35, wherein the biasing member comprises a spring operably connected between the linkage and the housing.

41. A latch assembly for a damper of the type that is installed in a housing and having at least a first blade that can move from an open position whereby fluid is permitted to pass through the housing, to a closed position whereby fluid flow through the housing is restricted, the latch assembly comprising:

the housing;

a first linkage supported by the housing and configured to be coupled with the blade so as to move along with the blade;

a first member communicating with the linkage, wherein the latch assembly member is configured to translate from a first position when the damper blade is open to a second position when the damper blade is closed; and

a second member supported by the housing configured to interfere with the first latch assembly member when the first latch assembly member is in the second position.

42. The latch assembly as recited in claim 41, wherein the first member comprises a latch.

43. The latch assembly as recited in claim 42, wherein the latch is integral with the linkage.

44. The latch assembly as recited in claim 43, wherein the second member is a catch.

45. The latch assembly as recited in claim 44, wherein the catch is formed in the housing.

46. The latch assembly as recited in claim 42, wherein the latch is movably coupled to the linkage, and wherein a spring member biases the latch member into interference with the catch member.

47. The latch assembly as recited in claim 41, further comprising a second linkage connected to the first linkage and operable to be coupled to a second damper blade.